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January 27, 1993

Ms. Donna Searcy, Secretary
Federal Communications Commission
1919 M Street N.W.
Washington, DC 20554

Re: Reply Comments of Telesciences, Inc., Harris Corporation-Farinon Division and Digital Microwave Corporation - ET Docket 92-9

Dear Ms. Searcy:

Transmitted herewith for filing on behalf of Telesciences, Inc., Harris Corporation-Farinon Division and Digital Microwave Corporation is an original and five (5) copies of the Reply Comments of Telesciences, Inc., Harris Corporation-Farinon Division and Digital Microwave Corporation in Docket 92-9. Please stamp and return the additional copy included.

Any questions concerning this filing should be addressed to the undersigned. Thank you in advance for your attention to this matter.

Sincerely,

Catherine Wang

Catherine Wang

Enclosures

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	ET Docket No. 92-9
Redevelopment of Spectrum to	)	
Encourage Innovation in the	)	RM-7981
Use of New Telecommunications	)	RM-8004
Technologies	)	

REPLY COMMENTS OF TELESCIENCES, INC., HARRIS CORPORATION-FARINON DIVISION AND DIGITAL MICROWAVE CORPORATION

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Dated: January 27, 1993

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SUMMARY

As leading manufacturers of microwave equipment in the U.S., the Joint Commenters have a fundamental interest in assuring that the channelization plan and the technical rules adopted for the 4, 6, 10 and 11 GHz bands adequately address the needs of 2 GHz users displaced by emerging technologies. The Joint Commenters understand that every decision regarding use of the spectrum requires that the Commission balance a variety of factors to achieve an equilibrium between conflicting spectrum needs and various public interest considerations such as spectrum efficiency, spectrum utilization, availability of equipment, cost of equipment, need for service, etc. In this proceeding, the Joint Commenters propose a channelization plan and other technical rules that will achieve that delicate equilibrium. Specifically, in these reply comments, the Joint Commenters' propose a 1.25 MHz based channelization plan that:

- provides ample wideband and narrowband channels to meet the needs of displaced 2 GHz users;
- maximizes spectrum efficiency;
- maximizes spectrum utilization; and
- promotes competition.

The Joint Commenters also amend their channelization plan to reflect industry consensus that the 29.652 MHz-band spacing in the lower 6 GHz band best serves the public interest. No other channelization plan under consideration by the Commission balances these public interest considerations as well as the Joint Commenters' modified plan. Accordingly, the Joint Commenters strongly urge the Commission to adopt their 1.25 MHz

based channelization plan, as modified. Further, in light of the scarcity of spectrum available to house displaced 2 GHz users, the Joint Commenters fervently believe that the Commission should not allow incumbent 10 GHz licensees to expand their point-to-multi-point systems in the 10 GHz band.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	
	ET Docket No. 92-9
Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies	RM-7981 RM-8004

REPLY COMMENTS OF TELESCIENCES, INC., HARRIS CORPORATION-FARINON DIVISION AND DIGITAL MICROWAVE CORPORATION

Telesciences, Inc., Harris Corporation-Farinon Division ("Harris"), and Digital Microwave Corporation ("DMC") (collectively, "Joint Commenters") by their undersigned counsel, hereby submit their reply comments to the Further Notice of Proposed Rule-making[1/] ("Notice") in the above-captioned proceeding. The Joint Commenters' initial comments supported the Commission's effort to adopt a channelization plan and technical rules for the 4, 6, 10 and 11 GHz bands to accommodate 2 GHz users relocating to those bands in order to clear spectrum for the introduction of emerging technologies. Nevertheless, after careful consideration of the Notice, the Joint Commenters concluded that the centerpiece of the Commission's proposal, the channelization plan, should be substantially

[1/] *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, Further Notice of Proposed Rulemaking,* 7 FCC Rcd. 1542 (1992). The Commission extended the reply comment deadline to January 27, 1993. *See Order Extending Time for Filing of Reply Comments, ET Docket 92-9* (released January 7, 1993).

modified to meet the technical needs of displaced 2 GHz users.[2/] The Joint Commenters believe that the channelization plan and technical rules adopted for the frequency bands above 3 GHz must strike the appropriate balance between accommodating the needs of users and advancing the public interest objectives of introducing new services, developing new technologies, and increasing competition in the provision of services and equipment manufacturing. In particular, the Joint Commenters believe that the rules adopted must address the technical needs of displaced 2 GHz users and other users sharing the 4, 6, 10 and 11 GHz bands, maximize spectrum efficiency and utilization, and facilitate continued competition in the manufacture of reasonably priced microwave equipment. The concerns raised in the initial comments confirm that these public interest considerations should guide the Commission in assessing the various proposals in this proceeding.[3/] The alternative 1.25 MHz-based channelization plan detailed in the Joint Commenters' initial comments[4/] and modified in these reply comments best satisfies these public interest considerations and should be adopted.

[2/] These modifications included the adoption of a 1.25 MHz-based channelization plan that would provide narrowband and wideband channels in the 6 GHz band and increase the maximum bandwidth in the 4 GHz band to 40 MHz. The Joint Commenters also proposed that the Commission establish identical interference protection criteria and coordination procedures for private and common carrier microwave systems, expedite negotiations with NTIA to establish terms for non-government licensee access to the 1.7 - 1.85 GHz band and opposed formalization of the industry practice of reserving growth channels. *See generally* Comments of Joint Commenters.

[3/] *See e.g.* Comments of Motorola at 5; Comments of American Petroleum Institute at 7.

[4/] This channelization plan is consistent with the channelization plan submitted by the Telecommunications Industry Association's Fixed Point to Point Communications Section.

I. INTRODUCTION

The initial comments reveal that all interested parties including displaced users of the 2 GHz band, spectrum coordinating entities, and equipment manufacturers are primarily concerned with the adequacy of replacement spectrum for the various wideband and narrowband systems[5/] relocating to the frequency bands above 3 GHz, spectrum efficiency and spectrum utilization.[6/] In these reply comments, the Joint Commenters' amend their channelization plan to reflect the industry consensus that the 29.652 MHz band spacing in the lower 6 GHz band best serves the public interest.[7/] The Joint Commenters submit that adoption of their modified 1.25-MHz based channelization plan appropriately balances the public interest equation by:

- providing sufficient wideband and narrowband channels to meet the needs of displaced 2 GHz users;
- maximizing spectrum efficiency without unnecessarily increasing equipment costs;
- maximizing spectrum utilization; and
- promoting competition in the equipment manufacturing industry.

[5/] *See, e.g.,* Comments of the American Petroleum Institute at 7; Comments of Utilities Telecommunications Council at 4-5; Comments of National Spectrum Managers Association at 3; Comments of Northern Telecom at 5-6; Comments of MCI at 3-5; Comments of Joint Commenters at 7-9; Comments of Motorola at 4-5.

[6/] *See* EMI Communications Corporation at 4; Comments of Hughes Communications Galaxy, Inc. at 3; Comments of United States Telephone Association at 2-3; Comments of Northern Telecom at 6; Comments of Comsearch at 10; Comments of National Spectrum Managers Association at 7-8; Comments of Bell Atlantic at 3-4.

[7/] A revised channel plan for the 6 GHz band is attached as "APPENDIX A".

The initial comments also provided substantial support for the Joint Commenters' view that 1) Part 21 prior coordination procedures and identical interference standards should be adopted for all of the shared-use bands,[8/] 2) automatic power control standards should be adopted for the bands above 3 GHz,[9/] and 3) government bands should be made available to accommodate the anticipated increase in spectrum demand.[10/] The Joint Commenters also continue to support a five-year transition period to the new digital spectrum efficiency standards[11/] and oppose formalization of the current industry practice of reserving growth channels on the databases of frequency coordinators.[12/]

Neither the Commission's proposal, nor any of the alternative proposals tendered in the comments, attains the near equilibrium of the relevant public interest considerations attained by the Joint Commenters' proposal. Accordingly, the Joint Commenters strongly urge the Commission to adopt their proposal, as modified.

[8/] *See* Comments of Utilities Telecommunications Council at 10; Comments of National Spectrum Managers Association at 5-6; Comments of Comsearch at 12; Comments of United States Telephone Association at 7; Comments of Western Tele-Communications, Inc. at 5.

[9/] *See* Comments of National Spectrum Managers Association at 8-9; Comments of Comsearch at 22; Comments of GTE Corporation at 9; Comments of United States Telephone Association at 8.

[10/] *See, e.g.,* Comments of American Personal Communications at 4-5; Comments of GTE Corporation at 8-9.

[11/] *See* Comments of Joint Commenters at 18-19; Comments of Northern Telecom at 7.

[12/] *See* Comments of Joint Commenters at 15. Spectrum should continue to be licensed on a first-come, first-served basis without regard to its unlicensed "reserved" status on a frequency coordinator's database.

II. THE ALTERNATIVE CHANNELIZATION PLAN PROPOSED BY THE JOINT COMMENTERS SHOULD BE ADOPTED

A. Adoption of a 1.25 MHz-Based Channelization Plan Best Serves the Public Interest

The Joint Commenters' 1.25 MHz-based channelization proposal best satisfies all of the public interest considerations that the Commission must balance in establishing technical rules that will meet the needs of incumbent and new users of the frequency bands above 3 GHz. First, as detailed in the Joint Commenters' initial comments, 1.25 MHz-based channels maximize both spectrum efficiency and utilization.[13/] 1.25 MHz channels multiply evenly into standard bandwidth channels (*e.g.*, 2.5, 3.75, 5, 10, 15, 30 MHz) to facilitate system expansions to greater bandwidth channels without leaving fallow spectrum remnants.[14/] Second, in contrast to the Commission's 1.6 MHz-based plan, as initially proposed by Alcatel, the Joint Commenters' 1.25 MHz-based plan benefits the public by ensuring continued competition in equipment supply.[15/] Albeit unintended, adoption of a 1.6 MHz-based channelization plan would have the effect of conferring a competitive advantage, at least in the near term, to a single manufacturer since the majority of U.S. owned manufacturers are not currently equipped to manufacture equipment compatible with 1.6 MHz channels.[16/]

[13/] *See* Comments of Joint Commenters at 5-7.

[14/] *See Id.* at 6.

[15/] The majority of U.S. manufacturers currently manufacture equipment compatible with 1.25 MHz channels. Consequently, equipment based on 1.25 MHz channels would be ready for distribution within one year of the close of this proceeding.

[16/] *See* Comments of Joint Commenters at 5.

B. *The Joint Commenters' Channelization Plan Proposes an Equitable and Technically Sound Combination of Wideband and Narrowband Channels*

The comments filed in this proceeding underscore the fact that displaced 2 GHz users are fundamentally concerned about the continued availability of sufficient wideband and narrowband channels in the 4, 6, 10 and 11 GHz bands.[17/] The Joint Commenters' channelization plan addresses this concern by providing narrowband channels in the lower 6 GHz band, and the 10 and 11 GHz band to accommodate long haul communications systems.[18/] The Joint Commenters' channelization plan also requires that the narrowband channels in the upper 6 GHz band be used before such channels are coordinated in the lower 6 GHz.[19/] The Joint Commenters believe that this requirement will preserve wideband channels (*i.e.* 30 MHz) in the lower 6 GHz band. Additional wideband channels (40 MHz and 20 MHz only) are available in the 4 and 11 GHz band. Further, the Joint Commenters' proposed prohibition on channel concatenations (unless a showing of necessity is made) will limit the creation of splinter channels thereby minimizing the adverse impact of the new channel plan on existing licensees while maximizing the number of potential users in the bands.

[17/] *See, e.g.,* Comments of the American Petroleum Institute at 7; Comments of Utilities Telecommunications Council at 4-5; Comments of National Spectrum Managers Association at 3; Comments of Northern Telecom at 5-6; Comments of MCI at 3-5; Comments of Joint Commenters at 7-9; Comments of Motorola at 4-5; Comments of EMI Communications at 5.

[18/] A channelization plan detailing the Joint Commenters proposal was attached as Appendix A to the Joint Commenters' comments in this proceeding.

[19/] Licensees seeking to use narrowband channels in the lower 6 GHz band will be required to make a showing that no other channels can be coordinated in the upper 6 GHz band. *See also,* Comments of the United States Telephone Association at 4; Comments of EMI Communications Corporation at 5.

The Joint Commenters' channelization proposal also mediates the various other concerns expressed in the initial comments. For example, the Joint Commenters' proposal addresses Pacific Telesis' concern that spectrum would be wasted if narrowband (10 MHz) channels were allowed to overlay broadband channels (30 MHz) channels[20/] by requiring that the narrowband channels in the upper 6 GHz band be used before the narrowband channels in the lower 6 GHz band. Further, if the Joint Commenters' plan is adopted, sharing of the spectrum would be administered by the Commission, so that one 10 MHz user could not randomly place a 10 MHz radio within a 30 MHz slot and prevent the use of the remaining 20 MHz by two other users.[21/] Moreover, spectrum efficiency will not be compromised if a 3 MHz band is divided for use by 10 MHz radios because those radios possess the same bits/Hertz efficiency as the 30 MHz radios. The Joint Commenters also believe that their plan adequately provides for both wideband and narrowband users in the 11 GHz band. Thus, the Joint Commenters' proposal balances the needs of all interested parties and advances the Commission's objective to clear the 2 GHz band for the introduction emerging technologies.

[20/] *See* Comments of Pacific Telesis at 3-5.

[21/] Subdivision of the 30 MHz band is not novel. The 1/N rule codified in Part 21, 47 C.F.R. § 21.122(a)(3), currently provides for the subdivision of 30 MHz channels. Many cellular operators including Pacific Telesis are using these radios in their networks.

C. *The Joint Commenters' Channelization Proposal Strikes The Appropriate Balance Between Spectrum Efficiency And Equipment Costs*

It is axiomatic that the radio frequency spectrum is a finite, scarce resource that must be managed with an eye towards maximizing the number of possible users while ensuring the efficient use of the spectrum by each user. In managing the spectrum, the Commission should also implement rules that encourage users to make the most efficient use of the spectrum given their practical concerns of equipment availability, equipment costs, and system reliability. In particular, the Commission's Rules should not inhibit users from meeting their communications needs with narrowband channels, using equipment that is generally less costly than wide bandwidth radios, if feasible for the proposed use. In this proceeding, therefore, the Commission should be careful not to impose spectral efficiency requirements for narrowband equipment (using 3.75 MHz bandwidth or less) that would require manufacturers to incorporate more complex, costly components and technology in such narrowband radios. If the Commission's rules effectively increase the cost of narrowband equipment, users will have little economic incentive to strive to meet their communications needs using the narrowest bandwidth possible.

Consistent with this view, the Commission should adopt technical rules and channelization plans that maximize efficient use of the spectrum while ensuring that equipment designed to meet the established efficiency standards can be manufactured at a reasonable cost. In contrast to the 1.6 MHz-based channelization plan proposed in the Notice, the efficiency standards implicit in the Joint Commenters' channelization plan provides the Commission the flexibility to balance these public interest considerations. High spectral efficiency (bits/Hertz) should not be attained at the expense of reasonable equipment cost and path reliability. The high spectral efficiency (bits/Hertz) of Alcatel's channelization plan

appears impressive at first glance. However, when path reliability and the cost of manufacturing a radio designed to meet such efficiency specifications is taken into account, it becomes apparent that these efficiency standards are contrary to the public interest.

Radios designed to meet the efficiency standards of the Alcatel channelization plan will be more expensive than radios designed to meet the efficiency standards of the Joint Commenters' plan. There is no flexibility in the Alcatel plan for inexpensive, yet, reasonably spectrally efficient radios to be manufactured for uncongested areas. In contrast, the Joint Commenters' proposal provides the flexibility for reasonably priced, highly reliable radios to be manufactured for uncongested areas and more spectrally efficient, complex and costlier radios to be manufactured for congested areas.[22/] Indeed, the Joint Commenters have introduced 8 T1 and 12 T1 radios at 6 and 10 GHz which are more spectrally efficient than the Commission's rules require for those customers located in very congested areas.

Moreover, unlike the 1.6 MHz channelization plan, the Joint Commenters' 1.25 MHz-based channelization plan does not sacrifice path reliability. Under the Alcatel plan, power amplifiers and filters have to be more linear as the modulation scheme increases. As the modulation scheme increases, the system gain of the radios decreases and path reliability, which is critical to displaced users of the 2 GHz band, is diminished.

Alternatively, if the Commission elects to sacrifice path reliability and lower equipment costs for higher spectral efficiency, then using state-of-the-art modulation technology, the Joint Commenters' could modify their plan to produce equipment with greater efficiency. Regardless of the spectral efficiency standards adopted by the

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[22/] The Commission rules do not prohibit the use of equipment that is more spectrally efficient than the minimum standards established by the rules.

Commission, the Joint Commenters' 1.25 MHz-based channelization plan should be adopted because it does not waste valuable spectrum by leaving inefficient spectrum remnants.

III. CHANNELIZATION PLANS PROPOSED BY OTHER COMMENTERS SHOULD BE REJECTED

The alternative channelization plans proposed by AT&T, MCI and Northern Telecom are inadequate to meet the needs of displaced 2 GHz users and incumbent users of the frequency bands above 3 GHz. AT&T proposes that the Commission not channelize spectrum in the 6 GHz guard bands and reserve such spectrum for emerging technologies, such as PCS.[23/] AT&T's proposal is contrary to the public interest and should be rejected. The availability of spectrum for emerging technologies is not at issue in this docket.[24/] This docket was initiated to decide how to divide the spectrum in higher frequency bands to accommodate all displaced users. In this regard, the Joint Commenters' plan proposes to channelize the guard bands or auxiliary bands in the 6 GHz band to accommodate displaced 2 GHz users. Further, in anticipation of the immediate demand for equipment designed for the 6 GHz band, the Joint Commenters and other manufacturers have already developed and distributed equipment designed for the 6 GHz band. Thus, if the Commission elects not to reallocate the 6 GHz band to point-to-point microwave operations, equipment manufacturers and displaced 2 GHz users would be adversely affected.

MCI's channelization proposal fails to provide adequately for the needs of displaced 2 GHz narrowband users. MCI's channelization proposal retains the existing twelve 40 MHz

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[23/] *See* Comments of AT&T at 4-5.

[24/] The Commission has already allocated spectrum for emerging technologies. *See First Report and Order and Third Notice of Proposed Rulemaking*, ET Docket 92-9, RM-7981, RM-8004 (released September 4, 1992).

bandwidth channels in the 11 GHz band, adds six 40 MHz bandwidth channels in the 4 GHz band and admittedly reduces the frequency alternatives for the narrow bandwidth channels.[25/] MCI justifies its failure to provide for narrowband users by arguing that "it is unlikely that equipment manufacturers will develop products adaptable to the numerous frequency choices in the Notice."[26/] This proposal should also be rejected as contrary to the public interest. Adoption of MCI's proposal would result in the allocation of less spectrum for 1.6 MHz bandwidth radios at 4 and 6 GHz than currently exists at 2 GHz. Given the substantial number of narrowband users in the 2 GHz band, like the AT&T proposal, adoption of this proposal would retard rather than expedite the relocation of displaced 2 GHz users. Further, MCI's justification for reducing the number of narrowband channels is without merit. As leading microwave equipment manufacturers in the U.S., the Joint Commenters can state with certainty that a broad array of narrowband and wideband radios will continue to be developed and manufactured.

Northern Telecom proposes that only wideband channels be permitted in the 6 GHz band because it believes that mixed wideband and narrowband channels in these bands will be difficult to coordinate and will retard the development or expansion of wideband systems.[27/] Northern Telecom offers no compelling technical or other reason why the 6 GHz band cannot accommodate the demand for both narrowband and wideband

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[25/] *See* Comments of MCI at 4.

[26/] *Id.* at 5.

[27/] *See* Comments of Northern Telecom at 5.

channels.[28] The Joint Commenters' plan recognizes that displaced 2 GHz users require both wideband and narrowband channels to relocate their systems with minimal service disruptions. Accordingly, the Joint Commenters' plan provides wideband and narrowband channels in a spectrum efficient manner within the 6 GHz band in order to accommodate all displaced 2 GHz users.

IV. UPON REVIEW OF THE INITIAL COMMENTS, THE JOINT COMMENTERS AGREE THAT THE EXISTING 29.652 MHz SPACING IN THE 6 GHz BAND SHOULD BE RETAINED

The initial comments revealed substantial opposition to establishing 30 MHz band spacing in the lower 6 GHz band. Numerous commenters opposed the change to 30 MHz spacing in the lower 6 GHz band arguing that it would result in a substantial waste of spectrum (*i.e.*, up to 2.2 MHz).[29] Other commenters argued that it would be difficult for incumbent users and new users to coexist because of inconsistent channel plans.[30] Upon review of the comments and consultation with Comsearch, the Joint Commenters are persuaded that a 29.652 MHz plan will work with 30 MHz bandwidth radios.[31] Today's 30 MHz, 135 Mbps digital radios are coordinated into the existing "T" Plan (29.652 MHz band spacing) in the 6 GHz band. Other channels would be accommodated as follows:

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[28] Further, Northern Telecom's proposal to introduce only 40 MHz channels in the 6 GHz band is inconsistent with the current widespread use of 30 MHz bandwidth equipment in this band.

[29] *See e.g.* Comments of Bell Atlantic Companies at 3; Comments of EMI Communications Corporation at 4-5; Comments of MRC Telecommunications, Inc. at 3-5; Comments of United States Telephone Association at 3-4.

[30] *See e.g.* Comments of MRC telecommunications, Inc. at 4; Comments of Comsearch at 10.

[31] A revised channelization plan for the lower 6 GHz band is attached as Appendix A.

Authorized Bandwidth	Channel Bandwidth
30.00 MHz	29.6520 MHz
15.00 MHz	14.8260 MHz
10.00 MHz	9.8840 MHz
5.00 MHz	4.9420 MHz
3.75 MHz	3.7065 MHz
2.50 MHz	2.4710 MHz
1.25 MHz	1.2355 MHz

Despite their endorsement of 29.652 MHz spacing for the 6 GHz band, the Joint Commenters' urge the Commission to maintain the 30 MHz and 10 MHz authorized bandwidths to accommodate the ease of implementing SONET interfaces for STS3 and STS1 respectively. Under this approach, once again, the Joint Commenters' plan will accommodate the needs of all interested parties.

V. THE COMMISSION SHOULD NOT MAKE AN EXCLUSIVE ALLOCATION OF SPECTRUM TO THE DIGITAL TERMINATION SERVICE OR ADOPT RULES THAT WOULD PERMIT SYSTEM EXPANSIONS IN THE 10 GHz BAND

The Commission should not adopt SR Telecom's proposal to reserve exclusively the 10 GHz band for digital termination service ("DTS") or its alternative proposal to allocate exclusively channels 1-4 and 11-14 in the 10 GHz band for point-to-multipoint use. All displaced current users of the 2 GHz band cannot be accommodated in the 4 and 6 GHz bands. In particular, 10 GHz spectrum is needed for displaced 2 GHz users with paths under 17 kilometers. Moreover, grant of SR Telecom's request would unnecessarily delay the introduction new technologies without any assurance that viable DTS systems would germinate over time. SR Telecom makes only a speculative claim that the failure of DTS is due to the lack of radios for the 10 GHz band. Even if that were the case, SR Telecom makes no credible showing that its radios will be imminently available. The Commission

cannot reserve scarce spectrum based on unproven speculation that the introduction of 10 GHz radios will galvanize new service for spectrum that has been fallow for years. Further, contrary to SR Telecom's suggestion that there is no other spectrum available to DTS providers, DTS and DEMS service providers can use the 18 GHz band for which equipment is currently available.

The Joint Commenters also oppose the proposal of several commenters that the Commission prescribe rules to provide for growth channels and the addition of new stations to grandfathered systems in the 10 GHz band.[32/] It is well established that point-to-multipoint systems impede the reuse of frequencies by other users in their immediate geographic area. Consequently, such systems waste valuable spectrum. In light of the scarcity of spectrum to relocate displaced 2 GHz users, the Joint Commenters fervently believe that the Commission should not allow incumbent licensees to squander additional spectrum by permitting the expansion of point-to-multipoint systems in the 10 GHz band.

VI. CONCLUSION

Unlike any of the other channelization proposals offered for consideration, the Joint Commenters' channelization proposal satisfies the relevant public interest considerations. The Joint Commenters' plan:

- provides sufficient wideband and narrowband channels to meet the needs of displaced 2 GHz users;
- maximizes spectrum efficiency without unnecessarily increasing equipment costs;
- maximizes spectrum utilization; and
- promotes competition in the equipment manufacturing industry.

[32/] *See e.g.* Comments of National Spectrum Managers Association at 4.

Accordingly, the Commission should adopt the Joint Commenters' modified channelization plan as well as their recommendations with regard to the adoption of Part 21 prior coordination procedures and identical interference standards for all of the shared-use bands, and automatic power control standards for the bands above 3 GHz. The Joint Commenters also urge the Commission not to formalize the industry practice of reserving growth channels and to allow a five year transition period for full implementation of new spectrum efficiency standards and to expedite negotiations with NTIA for access to government bands.

Respectfully submitted,

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Dated: January 27, 1993

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APPENDIX A

REVISED CHANNELIZATION PLAN FOR THE 6 GHZ BAND

5,925 - 6,425 MHz, 1.2355 Mhz bandwidth channels 1

	Transmit (receive) (MHz)	Receive (transmit) (MHz)
1	5925.6250	6175.6250
2	5926.8750	6176.8750
3	5928.1250	6178.1250
4	5929.3750	6179.3750
5	6108.90175	6360.94175
6	6110.13725	6362.17725
7	6111.37275	6363.41275
8	6112.60825	6364.64825
9	6113.84375	6365.88375
10	6115.07925	6367.11925
11	6116.31475	6368.35475
12	6117.55025	6369.59025
13	6118.78575	6370.82575
14	6120.02125	6372.06125
15	6121.25675	6373.29675
16	6122.49225	6374.53225
17	6123.72775	6375.76775
18	6124.96325	6377.00325
19	6126.19875	6378.23875
20	6127.43425	6379.47425
21	6128.66975	6380.70975
22	6129.90525	6381.94525
23	6131.14075	6383.18075
24	6132.37625	6384.41625
25	6133.61175	6385.65175
26	6134.84725	6386.88725
27	6136.08275	6388.12275
28	6137.31825	6389.35825

5,925 - 6,425 MHz, 1.2355 Mhz bandwidth channels 1

	Transmit (receive) (MHz)	Receive (transmit) (MHz)
29	6138.55375	6390.59375
30	6139.78925	6391.82925
31	6141.02475	6393.06475
32	6142.26025	6394.30025
33	6143.49575	6395.53575
34	6144.73125	6396.77125
35	6145.96675	6398.00675
36	6147.20225	6399.24225
37	6148.43775	6400.47775
38	6149.67325	6401.71325
39	6150.90875	6402.94875
40	6152.14425	6404.18425
41	6153.37975	6405.41975
42	6154.61525	6406.65525
43	6155.85075	6407.89075
44	6157.08625	6409.12625
45	6158.32175	6410.36175
46	6159.55725	6411.59725
47	6160.79275	6412.83275
48	6162.02825	6414.06825
49	6163.26375	6415.30375
50	6164.49925	6416.53925
51	6165.73475	6417.77475
52	6166.97025	6419.01025
53	6170.6250	6420.6250
54	6171.8750	6421.8750
55	6173.1250	6423.1250
56	6174.3750	6424.3750

1 Alternate channels. These channels should be used only if all other channels at 6,525 - 6,875 MHz are blocked.

5,925 - 6,425 MHz, 2.471 MHz bandwidth channels 1

	Transmit (receive) (MHz)	Receive (transmit) (MHz)
1	5926.2500	6176.2500
2	5928.7500	6178.7500
3	6109.5195	6361.5595
4	6111.9905	6364.0305
5	6114.4615	6366.5015
6	6116.9325	6368.9725
7	6119.4035	6371.4435
8	6121.8745	6373.9145
9	6124.3455	6376.3855
10	6126.8165	6378.8565
11	6129.2875	6381.3275
12	6131.7585	6383.7985
13	6134.2295	6386.2695
14	6136.7005	6388.7405
15	6139.1715	6391.2115
16	6141.6425	6393.6825
17	6144.1135	6396.1535
18	6146.5845	6398.6245
19	6149.0555	6401.0955
20	6151.5265	6403.5665
21	6153.9975	6406.0375
22	6156.4685	6408.5085
23	6158.9395	6410.9795
24	6161.4105	6413.4505
25	6163.8815	6415.9215
26	6166.3525	6418.3925
27	6171.2500	6421.2500
28	6173.7500	6423.7500

1 Alternate channels. These channels should be used only if all other channels at 6,525 - 6,875 MHz are blocked.

5,925 - 6,425 MHz, 3.7065 MHz bandwidth channels 1

	Transmit (receive) (MHz)	Receive (transmit) (MHz)
1	6110.13725	6362.17725
2	6113.84375	6365.88375
3	6117.55025	6369.59025
4	6121.25675	6373.29675
5	6124.96325	6377.00325
6	6128.66975	6380.70975
7	6132.37625	6384.41625
8	6136.08275	6388.12275
9	6139.78925	6391.82925
10	6143.49575	6395.53575
11	6147.20225	6399.24225
12	6150.90875	6402.94875
13	6154.61525	6406.65525
14	6158.32175	6410.36175
15	6162.02825	6414.06825
16	6165.73475	6417.77475

1 Alternate channels. These channels should be used only if all other channels at 6,525 - 6,875 MHz are blocked.